



KIWIFRUIT GROWERS BIOSECURITY GUIDELINES

5 steps to strengthen
on-orchard biosecurity

Biosecurity is about protecting New Zealand from the risks posed by unwanted pests and diseases. All 4.7 million of us are part of our biosecurity system, protecting New Zealanders, our health and way of life, our natural and productive resources and our biodiversity.

Biosecurity threats could affect Orchard Gate Return (OGR), jobs and community. The next big threat could be here, undetected and spreading. It might already be on your doorstep. You have the power to protect your livelihood and investment with the five easy interventions covered in this on-orchard biosecurity plan.

It means managing risk to prevent the introduction of unwanted organisms, preventing their spread if they do arrive, and always maintaining vigilance so they can be detected.

To kiwifruit growers, biosecurity means the actions, practices and rules that are designed to keep out the pests and diseases that could affect kiwifruit or kiwifruit vines at a national, regional or individual orchard level.

This guide is designed to provide guidance, help identify risks, and how to address them. By developing an on-orchard biosecurity plan you will be able to identify and prioritise biosecurity practices relevant to your orchard and property. The plan you develop will be unique to your orchard, staff, and surrounding environment.





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Have you seen
something unusual?



CATCH IT



SNAP IT



REPORT IT



Protect your investment. Better biosecurity everyday.

Why is on-orchard biosecurity so important?

By practicing better biosecurity on-orchard, growers can reduce or eliminate the impacts of pests and diseases that are established in New Zealand, whether they have already reached the property or not.

Impacts of unwanted pests and diseases can include:

- ↓ • Reduction in productivity
- Reduction in the quality and value of kiwifruit
- Lower market value of kiwifruit
- The cost of control – it often costs more time and money to control an unwanted organism than to prevent it.

Better biosecurity on kiwifruit orchards also improves New Zealand's national resilience to outbreaks of disease. We know that the overall size of any outbreak may be reduced in an environment where good biosecurity practices form part of everyday practice, rather than being introduced after an outbreak has started. Where biosecurity measures are in place that limit the spread of established diseases they also limit the silent spread of a disease (for example, Brazilian Wilt) before it is detectable.

How do pests and diseases spread within and between orchards?

There are a range of pathways that pests and disease-causing pathogens can use to spread between orchards and the risk depends on the organism. Some of the common pathways include;



Plant material (rootstock, budwood and pollen)

Presents the highest risk of spreading a wide range of pests and pathogens over long distances



Tools

Tools used on infected material can easily spread this to other plants within and between orchards



Soil on footwear or equipment

Soil-borne pathogens such as Brazilian Wilt can be present in even the smallest amounts of soil (1g or less) which can be present on shoes or unclean equipment



Windborne

Perhaps the most difficult to control are windborne pests that can fly or be spread by wind.

What can you do to improve biosecurity on your property?

A wide variety of interventions can be applied to improve on-orchard biosecurity. Growers are strongly encouraged to discuss this with staff and contractors and complete a written biosecurity plan for the orchard. The following general biosecurity guidance will apply to most growers.



1. Understand your risks

- What pests and diseases could affect my orchard?
- What is happening in my local area?
- How might these enter my orchard? (Who and what enters my orchard and what might bring these in?)



2. Agree what must happen on site

- Share knowledge with staff and contractors.
- Agree requirements and ensure that they are met.



3. Source and trace clean plant material

- Rootstock, budwood, pollen, shelter and compost.
- Kiwifruit Plant Certification Scheme (KPCS) certification is mandatory for sourcing rootstock.



4. Check and clean

- Consider the risk from: tools, vehicles and machinery, harvest bins, people and clothing.
- Ensure everything coming across your boundary is free from soil and plant material.
- Clean tools at least between rows.



5. Report the unusual

- Be on the lookout and if you find anything unusual, catch it, snap it, and report it to KVH on 0800 665 825 or contact the Biosecurity New Zealand hotline on 0800 80 99 66.



What does a 4.7 million biosecurity team look like?

EVERYONE CAN:



Take a photo of any unusual bug or disease symptom in the orchard or environment and report it to KVH on 0800 665 825 or Biosecurity New Zealand on 0800 80 99 66.



Thoroughly check and clean all vehicles, machinery and tools before moving them to another property or orchard.



Routinely unpack online purchases carefully in case any hitchhiker pests are inside.



Promote New Zealand's biosecurity rules to overseas visitors before they come to visit.

AT YOUR PLACE OF WORK, YOU CAN:



Build biosecurity requirements into contracts.



Establish a pest of the month campaign to educate staff about potential risks and what to do if anything of concern is found.



Include biosecurity as a standard item on meeting and board agendas.



Get staff training to manage biosecurity risks encountered on the job.



STEP 1

Understand your risks

Only by understanding the risk can we act to protect our investment.

50% VINE LOSS

In Brazilian kiwifruit orchards because of Brazilian Wilt.

6 MONTHS+

The time it could take between infection with a soil-borne disease like Brazilian Wilt to when symptoms appear.

\$430 MILLION

The potential market access impact of a fruit fly incursion in Te Puke.

Psa is not the only threat to kiwifruit orchards. There are many pests and diseases identified offshore that could impact our ability to grow or sell kiwifruit should they arrive here. KVH maintains a pest list online at www.kvh.org.nz with almost 100 biosecurity risks to kiwifruit. Listed here are examples of our most unwanted.

Kiwifruit's most unwanted

How does this affect my OGR?

How might this enter my orchard?

Fruit flies

Market access restrictions

- Movement of infested fruit



Brazilian Wilt

Production impacts - up to 50% vine loss

- Tools
- Plant material
- Soil on people or vehicles and equipment



Brown Marmorated Stink Bug

Production impacts - fruit loss, control costs and residue issues for markets

- Imported vehicles and machinery
- Visitor's luggage
- Shipping containers
- Internet purchases



Spotted Lanternfly

Production impacts - mainly from sooty mould. Hitchhiker pest, so hard to control spread

- Eggs on imported vehicles, machinery or structural materials
- Shipping containers



Psa (non-New Zealand biovars)

Impacts to green varieties and possibly new gold varieties also

- Tools
- People
- Plant material



White Peach Scale

Production impacts - fruit loss and control costs

- Imported fruit being brought onto the orchard



Verticillium Wilt

Production impacts - up to 100% vine loss

- Tools
- Plant material
- Soil on people or vehicles and equipment



Invasive phytophthoras

Production impacts - plant killers, impacts unknown

- Tools
- Plant material
- Soil on people or vehicles and equipment



Understand your risks	Actions and considerations to reduce risk	Actions I have taken to protect my investment
<p>Offshore</p>	<p>Keep informed about biosecurity threats to the kiwifruit industry and how they spread:</p> <ul style="list-style-type: none"> • read - KVH Bulletin and website • talk to people - KVH staff, regional coordinators and biosecurity champions, post-harvest • listen - industry roadshows, field days and webinars <p>Is there any additional information that changes how I operate?</p>	<p>What I am doing to understand offshore risk:</p>
<p>My local region</p>	<p>Keep informed about what is happening in your region:</p> <ul style="list-style-type: none"> • read - know your growing region and status. Understand and follow relevant controls which are designed to protect you • talk to people - create a network of people you trust and check-in with them • listen - are any orchards that you are closely connected to experiencing pest or pathogen problems? <p>Is there any additional information that changes how I operate?</p>	<p>What I am doing to understand local risk:</p>
<p>Orchard border</p>	<p>If a new biosecurity threat entered New Zealand or my growing region, how could it enter my orchard? What can I do to reduce the risk?</p> <p>Do I understand all the potential pathways and am I managing the risks associated with these? This will include:</p> <ul style="list-style-type: none"> • vehicles • plant material • people • imported goods that may harbour pests or soil e.g. vehicles, online purchases, construction materials etc • vectors of pests/diseases e.g. bees, insects, soil, imported fruit, other plant species • associations with orchards in other regions • anything stored on the orchard, leased premises, bins etc 	<p>What are the ways in which biosecurity threats may enter my orchard? Write them down in order of likelihood:</p>



STEP 2

Agree what must happen on site

Growers don't operate in isolation. Everyone who crosses your orchard boundary has the potential to introduce threats. Consider sharing knowledge with your workers, contractors and colleagues. Consider ways to overcome cultural or language barriers to communicate effectively.

Consistency of grower messages to contractors keeps everyone on the same page.



Agree what must happen on site	Actions and considerations to reduce risk	Actions I have taken to protect my investment
<p>Set expectations with post-harvest, contractors and managers</p>	<p>Set your expectations with post-harvest, contractors and managers. They play a key role in biosecurity risk management. You may wish to formalise expectations in their contracts.</p>	<p>Who are the post-harvest operators, contractors and orchard managers I have established my biosecurity expectations with?</p>
<p>Train your people so they understand the risk, your expectations and stay engaged</p>	<p>Train your staff so they can achieve the agreed biosecurity expectations. Remember to use language they understand. Training opportunities may include:</p> <ul style="list-style-type: none"> • induction training • refresher training • updates, when change in risk requires it <p>Understanding risk, and how practices reduce risk, is helpful in achieving uptake</p>	<p>What is my training plan to ensure staff understand our biosecurity expectations?</p>

<p>Communicate your requirements to visitors</p>	<p>Make visitors aware of your biosecurity requirements to prevent them unintentionally introducing biosecurity threats to your orchard. This could be achieved with:</p> <ul style="list-style-type: none"> • signage that has clear instructions and contact details • a visitor register explaining requirements and instructions • consideration of language difficulties 	<p>How I communicate biosecurity requirements to visitors:</p>
<p>Check your expectations and requirements are being met</p>	<p>Verify that expectations are being met and risk is being managed. If not, review:</p> <ul style="list-style-type: none"> • expectations with post-harvest, contractors and managers • training • communication 	<p>How I check that my biosecurity expectations are being met:</p>



STEP 3

Source and trace clean plant material

The movement of plant material is considered the highest risk pathway of introducing pests or diseases into your orchard. Infection may not be immediately obvious on arrival.

You can reduce risk associated with plant material by following any movement controls in place, inspecting all material on arrival and isolating it for a quarantine period so that you limit the risk of exposing the entire orchard to new pests and diseases.

Keep records so that if we are faced with an incursion, we can quickly trace plant material movements, increase our chances of successful eradication, and limit impacts to the industry.



Source and trace clean plant material	Actions and considerations to reduce risk	Actions I have taken to protect my investment
<p>New rootstock and budwood</p>	<ul style="list-style-type: none"> • Grow and supply for your own needs on the orchard • Source KVH certified plants • Source grafting material from your own orchard if possible. Alternatively, source the cleanest possible material from registered budwood suppliers • Choose disease tolerant varieties and those which are suitable to your situation. Plan to replace less tolerant plants/varieties • Trace all plant movements on and off the property (rootstock, budwood, flowers, pollen etc.) and maintain records 	<p>Rootstock and budwood source and how I ensure it is clean:</p> <p>Tracing records updated <input type="checkbox"/> (tick when completed)</p>
<p>Pollen</p>	<ul style="list-style-type: none"> • Have sufficient pollinators on-orchard • Ideally, collect and mill own pollen on site • Source pollen from the cleanest possible source. This must be a KVH registered pollen provider 	<p>Pollen source and how I ensure it is clean:</p> <p>Tracing records updated <input type="checkbox"/> (tick when completed)</p>

<p>Compost and organic fertilisers</p>	<p>May contain plant material which hasn't been composted thoroughly and poses a risk of disease transference:</p> <ul style="list-style-type: none"> • use reputable suppliers • only use compost that is free of kiwifruit plant material or is from a KVH approved compost provider 	<p>Compost and organic fertiliser source and how I ensure it is clean:</p> <p>Tracing records updated <input type="checkbox"/> (tick when completed)</p>
<p>Other plant material</p>	<ul style="list-style-type: none"> • Diseases or pests may be introduced through other plants e.g. shelter plants and other crops. Assess risk of incoming plant material and ensure suppliers provide verification of freedom from biosecurity threats. Keep records of this. 	<p>Plant material of other species, where I source these and how I ensure they are clean:</p> <p>Tracing records updated <input type="checkbox"/> (tick when completed)</p>



STEP 4

Check and clean

Growers should check and be comfortable that inputs crossing their orchard boundary do not present a risk to their investment. Pests and pathogens can survive in small amounts of soil or plant material (e.g. a teaspoonful or single piece of budwood), so any item that may be contaminated from another orchard or location could be transporting a biosecurity threat.

Tools that cut into the tissue of a plant are the greatest risk (e.g. pruning and girdling), creating an entry point for pests and pathogens to enter.

People can transport pests and pathogens on clothing, hands, footwear and other personal items. Footwear is considered the greatest risk and can easily spread contaminated soil from one site to another. All visitors should have clean footwear and additional measures may be warranted for high-risk visitors.



Check and clean	Actions and considerations to reduce risk	Actions I have taken to protect my investment
<p>Property access</p>	<p>Manage access to property:</p> <ul style="list-style-type: none"> • limit the number of access points • put signage up to communicate biosecurity expectations • have a designated parking area 	<p>How I manage access to my orchard:</p>
<p>Tools and equipment</p>	<ul style="list-style-type: none"> • Sanitise all tools coming on to orchard (dedicated tools where possible) using effective and recommended sanitisers • Don't take risks by creating wounds in wet weather • Clean tools at least between rows and at breaks 	<p>How I manage the risk of tools and equipment entering my orchard and keep them clean:</p>
<p>Vehicles and machinery</p>	<p>Vehicles and machinery free of soil and plant material:</p> <ul style="list-style-type: none"> • high-risk vehicles and machinery sanitised • use signage at access points to direct vehicles to designated parking/hygiene control areas • allow only essential vehicles into the production area • limit access to established roads and tracks • provide a wash-down area for high-risk vehicles 	<p>How I manage the risk of vehicles and machinery entering my orchard:</p>

<p>Harvest bins</p>	<ul style="list-style-type: none"> • Ensure only clean and sanitised bins come on to the orchard and check to see they don't contain any leaf/plant material • Clear loadout areas of weeds before harvest • Follow movement controls in place 	<p>How I manage the risk of harvest bins entering my orchard:</p>
<p>Visitors and staff</p>	<p>All footwear cleaned and sanitised prior to entry:</p> <ul style="list-style-type: none"> • provide handwashing facilities, footwear cleaning and sanitising options (footbath, sanitiser spray) • alternatively, provide clothing and footwear for visitors/staff to wear on orchard 	<p>How I manage the risk of visitors and staff entering my orchard:</p>
<p>Imported fruit</p>	<ul style="list-style-type: none"> • Never bring imported fruit onto the orchard • Provide measures to ensure workers and visitors do not discard fruit near vines 	<p>How I manage the risk of imported fruit entering my orchard:</p>
<p>Crop protection</p>	<ul style="list-style-type: none"> • Keep on top of crop protection • Regular protectant programmes should match orchard risk and comply with National Pest Management Plans. For Psa apply at least one approved, effective, Psa protectant per year • Use industry approved products (from the Crop Protection Standard or KVH recommended product list) at label rates • Comply with requirements where orchards have been identified with resistance 	<p>How I keep on top of crop protection:</p>
<p>Remove and dispose of infected material</p>	<ul style="list-style-type: none"> • Identify and cut-out infected material regularly • Dispose (bury or burn on-site) well away from water sources, nurseries and production areas • Follow any protocols in place for disposal • Follow any movement controls in place for plant material 	<p>How I remove and dispose of infected material:</p>
<p>Prevent the spread of wild kiwifruit</p>	<ul style="list-style-type: none"> • Following harvest, remove all fruit from vines • Dropping unpicked fruit to the ground and mulching will assist the composting process and prevent mass-feeding by birds (such as white-eyes) over winter months • Never dispose of removed plant material into any adjacent gully or unmanaged area 	<p>How I manage unpicked fruit and dispose of removed plant material, including trunks, roots or leaders:</p>





STEP 5

Report the unusual

If not detected early, chances of eradication or effective control of a pest or disease is severely reduced. Anything unusual should be reported immediately so we are able to minimise the impacts on people's livelihoods, communities, and environments.

Records provide validation that an activity has occurred. In an incursion, the ability to trace backwards and forwards from a property makes it much easier to identify the extent of the problem.



Catch it, snap it, report it	Actions and considerations to reduce risk	Actions I have taken to protect my investment
<p>Catch</p>	<p>Routine monitoring, targeting high-risk:</p> <ul style="list-style-type: none"> • areas, such as new plantings and vulnerable vines • periods when risk of infection is greater • pest and diseases (know what to look for and ensure your staff do too) <p>Comply with specific monitoring requirements</p> <p>If an unusual pest is found contain it and take a photo. Take good photos of any vine symptoms.</p>	<p>How I look for biosecurity threats on my orchard:</p>
<p>Report</p>	<ul style="list-style-type: none"> • Report unusual pests you've caught or vine symptoms to KVH (0800 665 825) or the Biosecurity New Zealand hotline (0800 80 99 66) within 48 hours • Unusual vine symptoms include Psa-like symptoms on a previously 'Not Detected' orchard • Unmanaged and abandoned orchards must be reported to KVH • Wild kiwifruit must be reported to your regional council (and copied to KVH) 	<p>Reports made in the past 12 months:</p>
<p>Record</p>	<p>Keep a record of:</p> <ul style="list-style-type: none"> • all monitoring activities including unusual pests and vine health issues (an orchard map is an easy way to record locations) • new plants and budwood (source and location) • all plant movements on and off the property (rootstock, budwood, flowers, pollen etc.) to retain traceability 	<p>Where my records can be found for:</p> <ul style="list-style-type: none"> • Monitoring: • New plants and budwood: • All plant material movements across boundary:

What happens next?

Well done, you've taken action and reported an unusual pest or vine symptom. The potential benefit of this action to our industry cannot be overestimated, but what happens next and how will your operation be affected? There can be implications for biosecurity champions that do the right thing and make reports, but it's worth it because the earlier something is reported the greater chance we have of eradicating it. There is a process for what happens next (it's generic and each response may differ slightly) and how you can get more information.

After reporting	Description	Actions I can take to ensure smooth-running
<p>Identification, assessment and response</p>	<ul style="list-style-type: none"> The suspicious find is identified. In most instances it is found to not be of concern and no further action is required. If further action is required, the pest/pathogen is assessed to determine if a response is needed. Biosecurity New Zealand will contain the pest/pathogen to understand more about it and the impact it may have. Biosecurity New Zealand, KVVH and any other affected groups then work together to decide whether to formally respond and if so, set goals such as eradication or containment. Sometimes a response then moves into long-term management (as is the case with Psa currently). 	<p>Timeframes from notification to a response decision vary. For pests with serious impacts that we know a lot about (like fruit fly) it can be immediate, but for others it may take weeks.</p> <p>After reporting:</p> <ul style="list-style-type: none"> Access and provide records and information when requested (traceability information of plant material movements on and off the property is critical for a successful response) Follow directions to manage the pest/pathogen Respect confidentiality to avoid unnecessary market reaction.
<p>Effect on OGR</p>	<p>Most reports of unusual symptoms turn out to not be a biosecurity threat and there are no implications for growers. However, if a response is activated and losses are incurred because of response activities, you will be eligible for compensation under the Biosecurity Act (there are conditions).</p>	<p>Losses must be verifiable, so good production and business records are essential for compensation claims.</p> <p>Where my records can be found:</p>
<p>Who to talk to</p>	<ul style="list-style-type: none"> KVVH provides regular information advice about managing identified pests/pathogens and how a response is unfolding. NZKGI provides advice and support information to growers. Post-harvest operators help with operations and advice. 	<p>Where I store phone numbers/contact details for KVVH, NZKGI and my post-harvest operator:</p>



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